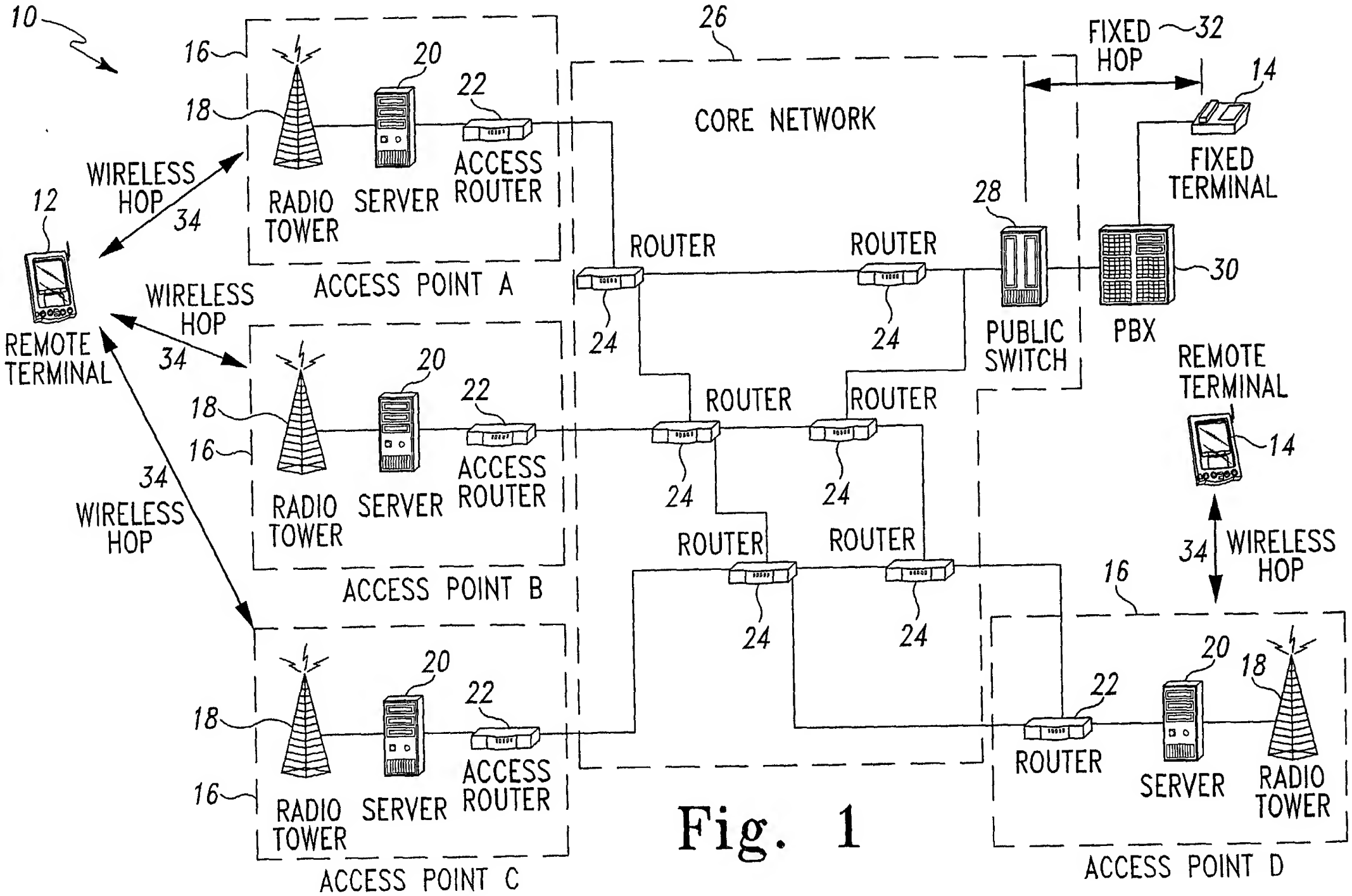

Fig. 1

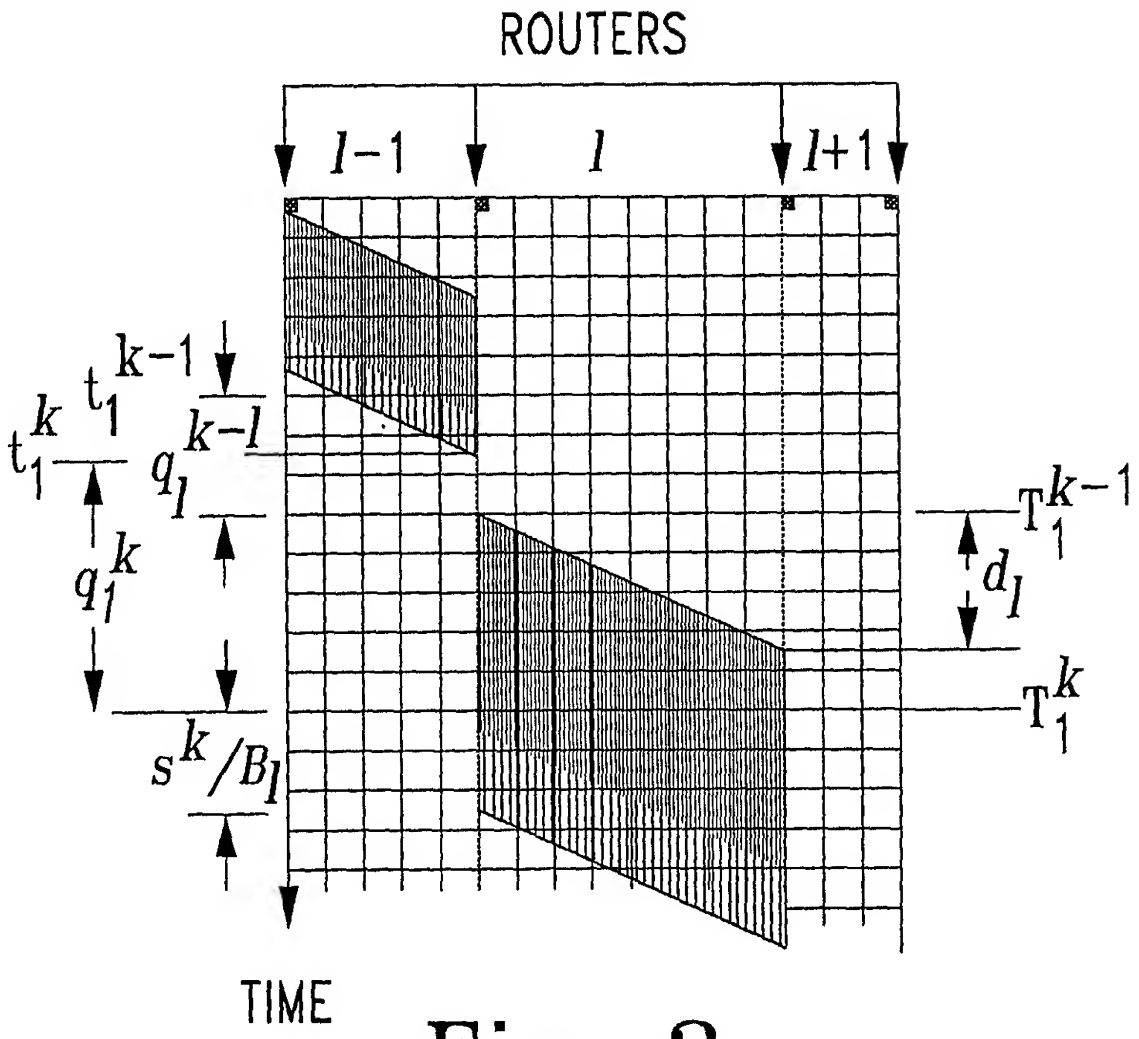

Fig. 2

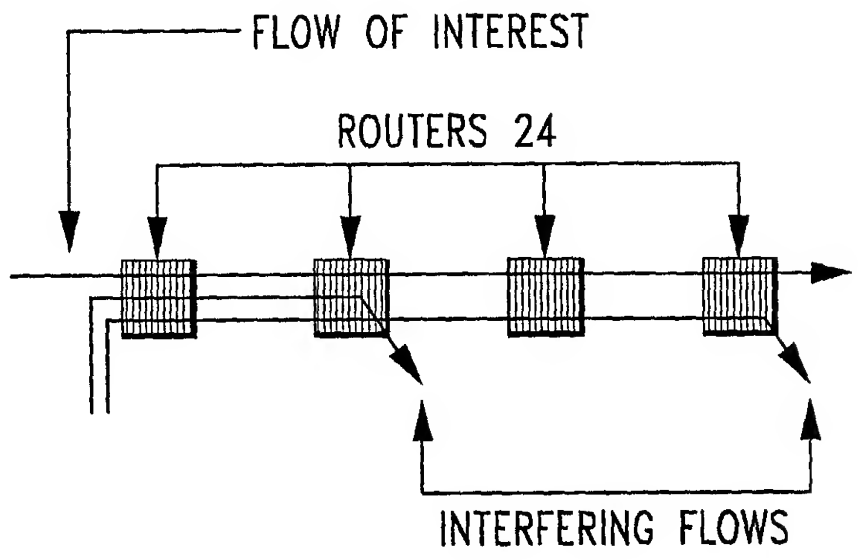

Fig. 3

Probe 1		Probe 2		Routers	
Field 1	Field 2	Field 3	Field 4	Field 5	Field 6
$\sum_{i=0}^{l-1} q_i^{probe_1}$	Max: $\hat{q}_i^{voice} + s^{probe_1}/B_i$ i=0, ..., l−1	$\sum_{i=0}^{l-1} q_i^{probe_2}$	Max: $\hat{q}_i^{voice} + s^{probe_2}/B_i$ i=0, ..., l−1	$\sum_{i=0}^{l-1} q_i^{\hat{}voice}$	$\sum_{i=1}^{l-1} \hat{\Delta} q_i^{voice}$

Fig. 4

Router (l)			
Forward	$\hat{q}_l^{voice}$	$q_l^{voice}{}_{previous}$	$\hat{\Delta} q_l^{voice}$
Reverse	$\hat{q}_l^{voice}$	$q_l^{voice}{}_{previous}$	$\hat{\Delta} q_l^{voice}$

Fig. 5

	Probe Queuing Delay	Transmission Delay
Probe 1	$q_l^{probe_1}$	$\left(s^{probe_1}/B_l\right)$
Probe 2	$q_l^{probe_2}$	$\left(s^{probe_2}/B_l\right)$

Fig. 6

	Inferred From Probe 1		Inferred From Probe 2		Network	Network
	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6
Forward Collector	$\sum_{i=0}^{l-1} q_i^{probe_1}$	Max: $q_i^{\hat{}voice} + s^{probe_1}/B_i$ i=0, ..., l−1	$\sum_{i=0}^{l-1} q_i^{probe_2}$	Max: $q_i^{\hat{}voice} + s^{probe_2}/B_i$ i=0, ..., l−1	$\sum_{i=0}^{l-1} q_i^{\hat{}voice}$	$\sum_{i=0}^{l-1} \Delta\hat{q}_i^{voice}$
Reverse Collector	$\sum_{i=0}^{l-1} q_i^{probe_1}$	Max: $q_i^{\hat{}voice} + s^{probe_1}/B_i$ i=0, ..., l−1	$\sum_{i=0}^{l-1} q_i^{probe_2}$	Max: $q_i^{\hat{}voice} + s^{probe_2}/B_i$ i=0, ..., l−1	$\sum_{i=0}^{l-1} q_i^{\hat{}voice}$	$\sum_{i=0}^{l-1} \Delta\hat{q}_i^{voice}$

Fig. 7

For: QUALITY OF SERVICE AWARE HANDOFF TRIGGER
Inventors: Johnny M. Matta, et al.
Serial No. 10/056,576, Atty. Docket: 10745/032

	Probe 1	Probe 2
Departure Time (From AR)	$T_{AR}^{probe_1}$	$T_{AR}^{probe_2}$
RTT (Round-Trip Time)	RRT_{probe_1}	RRT_{probe_2}
Arrival Time (At Correspondent Node)	$t_{CN}^{probe_1}$	$t_{CN}^{probe_2}$
Departure Time (From Correspondent Node)	$T_{CN}^{probe_1}$	$T_{CN}^{probe_2}$
Arrival Time (At AR)	$t_{AR}^{probe_1}$	$t_{AR}^{probe_2}$

Fig. 8

Delay (Δ)	$\tau_{total} = \tau_0 + \tau_1 + \ldots + \tau_{l-1}$
Jitter $(\Delta\tau)$	$\Delta\tau_{total} = \sqrt{(\Delta\tau_0)^2 + (\Delta\tau_1)^2 + \ldots + (\Delta\tau_{l-1})^2}$
Bandwidth (B)	$B_{total} = \{\min(B_i); i = 0, \ldots, (l-1)\}$
Packet Loss (L)	$L_{total} = 1 - [(1-L_0) \times (1-L_1) \times \ldots \times (1-L_{l-1})]$

Fig. 9

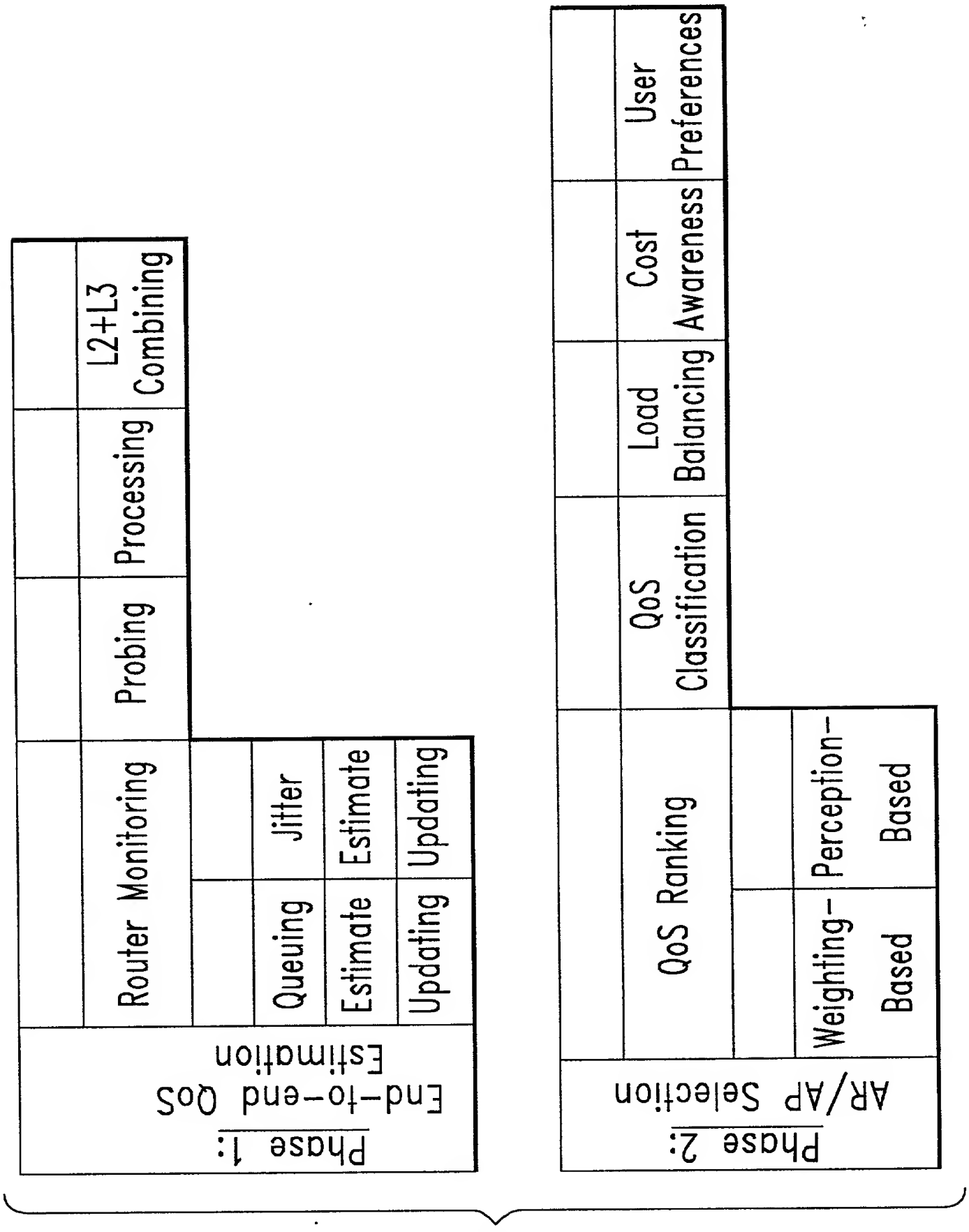
Phase 1:
End-to-end QoS Estimation
Router Monitoring
Probing
Queuing
Estimate
Updating
Jitter
Estimate
Updating
Processing
L2+L3 Combining
Phase 2:
AR/AP Selection
QoS Ranking
Weighting-Based
Perception-Based
QoS Classification
Load Balancing
Cost Awareness
User Preferences

Fig. 10